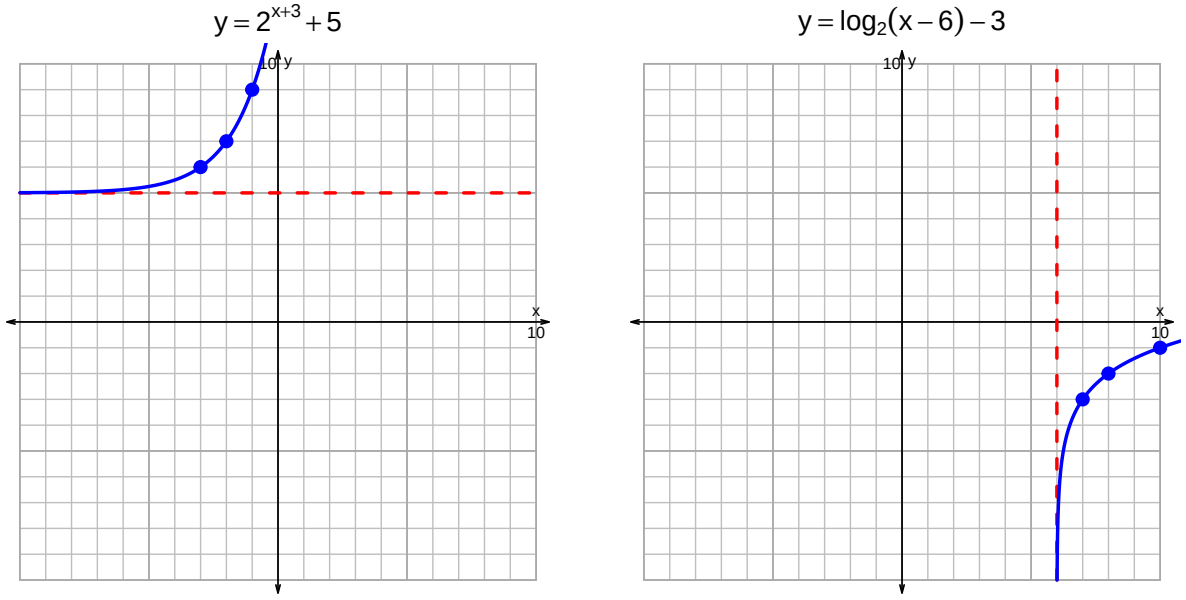
Name: Date:

S18QUIZ: EXP LOG (SLTN v254)

1. Graph $y = 2^{x+3} + 5$ and $y = \log_2(x-6) - 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{5}{4}\right) \cdot 10^{3t/7}$$

Divide both sides by $\frac{5}{4}$.

$$\frac{11 \cdot 4}{5} = 10^{3t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 4}{5}\right) = \frac{3t}{7}$$

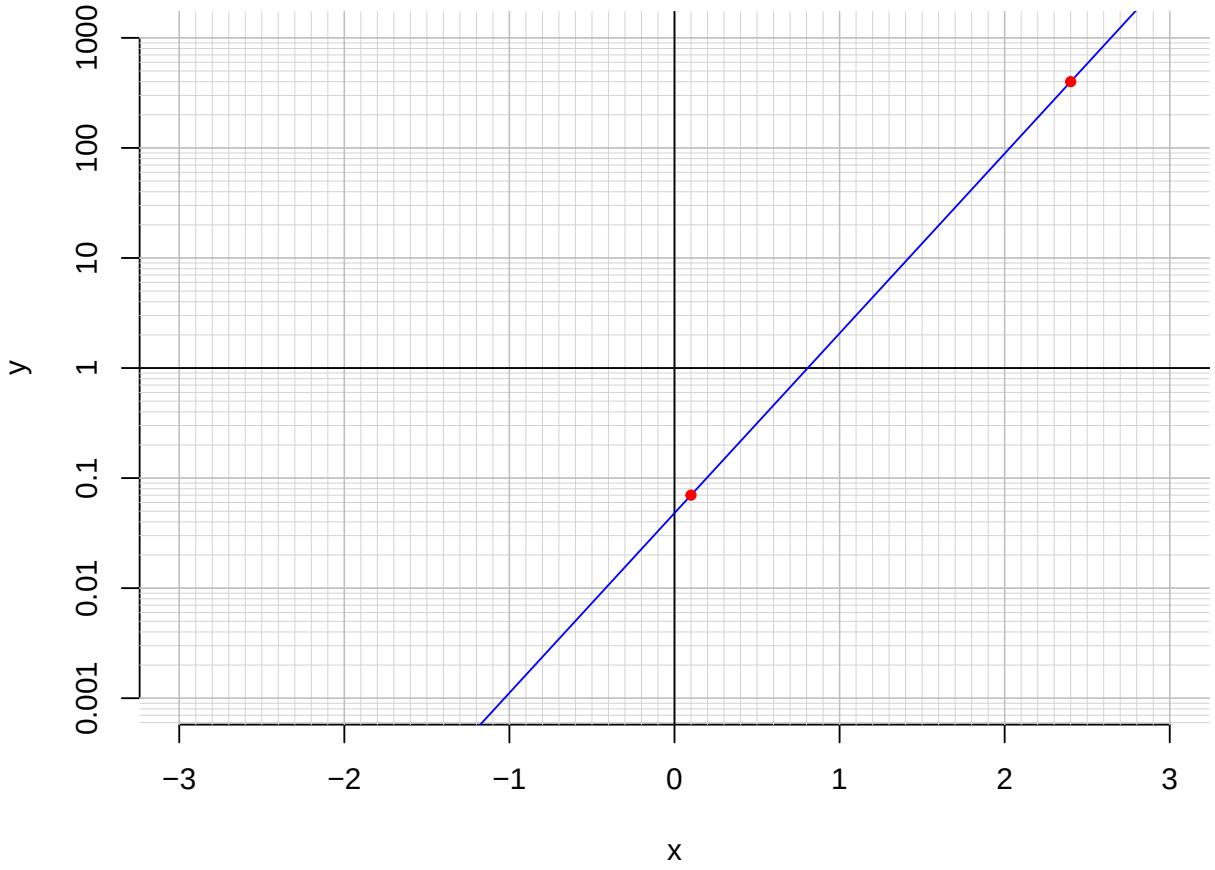
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_{10}\left(\frac{11 \cdot 4}{5}\right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_{10}\left(\frac{11 \cdot 4}{5}\right)$$

3. An exponential function $f(x) = 0.0481 \cdot e^{3.76x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.1)$.

$$f(0.1) = 0.07$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{3.76} \cdot \ln\left(\frac{x}{0.0481}\right)$$

c. Using the plot above, evaluate $f^{-1}(400)$.

$$f^{-1}(400) = 2.4$$